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OUTCOME OF SECOND BABY OF TWIN IN A RURAL TEACHING HOSPITAL OF WEST BENGAL, INDIA

Obstetrics & Gynaecology

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ABSTRACT

Background: Multiple pregnancies are a high-risk situation because of its inherent risks to mother and the fetus. Twin or multiple pregnancies are gaining importance worldwide because of the attributable rise in treatment of infertility including assisted reproductive technologies. Twin pregnancies are associated with increased fetal loss, prematurity, structural abnormalities, and fetal growth restriction. Complications associated with twin pregnancy. The conduct of a twin delivery remains one of the most challenging events in the current obstetric practice. **Methods:** This study was an Hospital-based cross-sectional descriptive study conducted in the Department of Obstetrics & Gynaecology of Bankura Sammilani Medical College and Hospital, Bankura, West Bengal from January 2020 to December 2020. 238 patients were included in the study after informed consent from the patient about being a part of this study. Template was generated in MS excel sheet and analysis was done on SPSS software. **Results:** Majority 154 (64.7%) of women belonged to age group 21-30 years. Gestational age of 159 (66.8%) mothers were < 37 weeks. Perinatal outcome of second twin was highest in the maternal age group 20 years. Perinatal outcome of second twin was highest in the birth weight of the 2nd twin < 2500 grams. Delivery time interval between the babies was maximum 175 (73.5%) is < 10 minutes. **Conclusions:** Gestational age, presentation, mode of delivery, and birth weight are the significant determinants of perinatal outcome of the second twin. The second twin is at higher risk of perinatal morbidity and mortality than the first twin. Frequent antenatal care should be advised to the mothers.

KEYWORDS

Birth weight, Gestational age, Perinatal mortality, Second twin, Twin pregnancy

INTRODUCTION:

Twin gestations comprise 3.3% of all pregnancies.[1] Twin pregnancies are associated with increased fetal loss, prematurity, structural abnormalities, and fetal growth restriction. Complications associated with twin pregnancy result from exaggerated physiological response, over-distension of uterus, hyperplacentosis, and unique problems posed by monochorionic placentation. Intrapartum complications include preterm labor, dysfunctional labor, malpresentation, operative vaginal delivery, and cesarean section. Postpartum complications are high such as postpartum hemorrhage, sepsis, and failure of lactation. The conduct of a twin delivery remains one of the most challenging events in the current obstetric practice. Besides a higher incidence of prematurity and low birth weight (birth weight < 2500 g) in twins, many other factors such as discordant growth, route of delivery, inter-twin delivery time interval, birth order, and gender have been reported to influence neonatal outcome adversely. Second twins delivered at term are at increased risk of delivery-related perinatal death.[2] The second twins are more vulnerable to adverse perinatal outcome than first twin due to separation of placenta, cord compression, cord prolapse, delay in delivery, and uterine dysfunction.[3] The second twin is at added risk of respiratory distress syndrome (RDS).[4] This outcome of the second twin is mostly related to discordant growth and also due to preterm birth. However, data related to twins born in the Southeast Asian region is sparse.

A woman having twin pregnancy should undergodetermination of the type of placenta, followed by adequate counseling regarding extra calorie intake, frequent antenatal visits for early identification of maternal morbidities and ultrasound for monitoring the fetal growth to detect any anomalies, intrauterine growth retardation (IUGR) and discordancy at the earlier onset.

The obstetrician should advise woman to take adequate bed rest, antenatal steroids and should plan for the best mode of delivery in each case to prevent preterm birth.[5] A multidisciplinary approach involving skilled obstetrician, anesthesiologists, and neonatologists is necessary for handling women bearing twin pregnancies to get a successful pregnancy outcome with less fetal and maternal morbidity.[6]

Twin pregnancy is becoming a problem of increasing dimensions worldwide with the dramatic increase of its incidence mostly attributable to assisted reproductive technologies (ARTs) [7]. Its incidence varies worldwide. The twinning rates are low (6–9 per 1000 births) in the whole of Eastern, South-Eastern, and Southern Asia including India. Latin America has low twin birth rates as those in Asia. The twin- birth rates in Europe and North America are intermediate, 9–16 per 1000 births. High national twinning rates of above 18 per 1000 births are found throughout Central Africa [8].

The study of twin or multiple births is important because of the elevated health risks for both mothers and babies, and accompanying greater health care cost [9]. Perinatal mortality and morbidity in twin pregnancy is five–seven times higher compared to singleton pregnancy [10]. Pre- maturity, low birth weight (LBW), birth asphyxia, birth trauma, intrauterine fetal death, and congenital malformations are the important factors to explain the reasons of high perinatal mortality.

Observational studies showed that the second twins are particularly at higher risk of perinatal death than the first twins. The second twin is more likely to have lower Apgar scores, less favorable umbilical arterial or venous parameters, a higher incidence of respiratory distress syndrome, a higher need for intubation, and a higher perinatal mortality [11–13].

Their disadvantage was attributed to differences in gender, birth weight, chorionicity, presentation, mode of delivery, time interval between births, birth trauma, instrumental delivery, and asphyxia. Most of the above observations are from the studies done in Europe and North America. In India, the data are scarce regarding the perinatal outcome of the second twins and the significant mediating factors for that outcome.

With the above background, the present study has been designed to determine the clinico-epidemiological profile and perinatal outcome of second twin deliveries at a rural teaching hospital of West Bengal, India

OBJECTIVES OF THE STUDY:

1. To find out the magnitude of perinatal outcome of the second baby in twin pregnancy in respect to gestational age, presentation, mode of delivery, and birth weight.
2. To find out the association, if any, of perinatal outcome of the second twin with the above variables.

METHOD AND MATERIALS:

Type of Study: Hospital-based cross-sectional descriptive study.

Study Setting: Department of Obstetrics and Gynecology, Bankura Sammilani Medical College and Hospital, Bankura, West Bengal.

Time Line: January 2020 to December 2020

Definition Of Problem: Multiple pregnancies are a high-risk situation because of its inherent risks to mother and the fetus.

Inclusion Criteria: Diagnosis of twin pregnancy confirmed by ultrasound examination. No known pre-existing medical complication like chronic hypertension, diabetes mellitus, renal disease, collagen vascular disease, or any other disorder that could complicate the present pregnancy; and absence of congenital anomalies in either fetus.

Exclusion Criteria: Mothers who refuse to participate in the study.

Sample Size: All women with confirmed diagnosis of twin pregnancy admitted and managed in the Department of Obstetrics and Gynecology, Bankura Sammilani Medical College and Hospital, Bankura, West Bengal during the period January 2020 to December 2020. Total sample size was 238.

Study Tools :
(1) Case record form; (2) present and past health recordsand investigation reports, if any; (3) all antenatal records regarding present pregnancy; (4) hospital records; (5) stethoscope and sphygmomanometer; and (6) ultrasound machine.

Study Technique
(1) History taking, and (2) clinical examination and investigations

Ethical clearance for conducting the study was obtained from the Institutional Ethics Committee. Informed consent to participate in the study was obtained from all the eligible women. Out of 250 eligible women who were initially included for the study, 238 women fulfilled all the criteria for inclusion in this study and for statistical analysis.

All the relevant information were recorded in the case record form, e.g., maternal age, gravidity, parity, detailed history, clinical examination findings including obstetric examination, ultrasound reports, gestational age at birth, presentation of both the fetuses at labor and delivery, mode of delivery, birth weight, and lastly, perinatal outcome of the babies including perinatal morbidity (neonatal illness and complications), and mortality (stillbirth and early neonatal death).

Analysis Of Data :
The outcome of the second twin with respect to gestational age, mode of delivery, and birth weight recorded, plotted and significance calculated using statistical analysis using SPSS 20.0 software.

RESULTS:

Table 1 : Sociodemographic Profile (n=238)

Parameters	Frequency with %	
	No.	%
Age (years)		
≤20	70	29.4
21–30	154	64.7
31–40	12	5.0
41–50	2	0.8
Total	**238**	**100.0**
Parity		
1 to 2	222	93.4
3 to 4	12	4.9
> 4	4	1.7
Total	**238**	**100.0**
Gravida		
G1	138	58.0
G2	71	29.8
G3	22	9.2
G4 and above	7	3.0
Total	**238**	**100.0**
Gestational age (weeks)		
< 37 weeks	159	66.8
37-39 weeks	72	30.3
40 weeks	7	2.9
Total	**238**	**100.0**

A total of 238 pregnant women having twin gestation beyond 28 weeks of gestation attaining our institute during the study period were included in the study. Sociodemographic profile of multiple pregnancies is mentioned in Table 1. Multiple pregnancies were highest in the maternal age group of 21–30 years consisting of 154 (64.7%) and were more prevalent in primigravida consisting of 138 (58%%). Parity 1 to 2 were highest i.e. 222 (93.4%) mothers. Gestational age of 159 (66.8%) of mothers were < 37 weeks.

Table 2 : Perinatal Outcome Of The Second Twin According To Maternal And Other Characteristics (n = 238)

Characteristics	Total		Perinatal outcome of second twin				Statistical value, significance
	No.	%	Alive		Dead		
			No.	%	No.	%	
Maternal age (years)							
< 20	44	18.5	39	88.6	5	11.4	$\chi^2 = 0.840$, df = 1
20	194	81.5	180	92.8	14	7.2	p>0.05, non-significant
Gravidity							
Primigravida	138	58.0	126	91.3	12	8.7	$\chi^2 = 0.227$, df = 1
Multigravida	100	42.0	93	93.0	7	7.0	p>0.05, non-significant
Birth weight of second twin (g)							
< 2500 (Low)	220	92.4	201	91.4	19	8.6	$\chi^2 = 1.689$, df = 1
2500 (Normal)	18	7.6	18	100	0	0.0	p>0.05, non-significant

Table 2 depicts the characteristics of the mother carrying twin pregnancy. Most women (194 or 81.5 %) 20 years of age group, and only 44 (18.5%) women were in the age group of <20 years age group. However, maternal age was not found to be associated with perinatal outcome of the second twin. Perinatal mortality of the second twin was significantly higher (8.7%) among Primigravida women than multigravida women (7.0%; p>0.05). Perinatal mortality of the second twin was only found in LBW (<2500 g) babies (8.6%).

Table 3: Birth Weight Of Both Babies

Parameters	First twin		Second twin		P value
	No.	%	No.	%	
Birth weight (kg)					
< 2	70	29.41	73	30.67	0.001 (Significant)
2 – 2.5	148	62.18	147	61.76	
2.5 - 3	20	8.40	18	7.56	
Total	238	100.0	238	100.0	

Table 3 depicts the birth weight of both babies. Birth weight of majority of both the twins were lies between 2 – 2.5 kg i.e. 148 (62.18%) and 147 (61.76%) respectively. 70 (29.41%) of first twin and 73 (30.67%) of second twin were lies < 2 kg and 20 (8.40%) of first twin and 18 (7.56%) of second twin were lies 2.5 – 3 kg birth weight group.

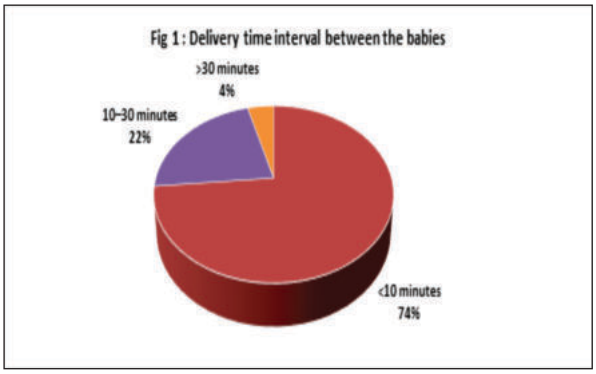

Figure 1 Shows That Delivery Time Interval Between The Babies Were < 10 Minutes In 74% Of Cases.

Table 4: Mode Of Delivery Of The Babies

Parameters	Total Number of cases	
	No.	%
Mode of delivery		
vertex spontaneous vaginal delivery	167	70.17
Forceps	24	10.08
Assisted breech delivery	16	6.72
Transverse lie Internal podalic version and breech extraction	7	2.94
LSCS	24	10.08
Total	238	100

Table 4 depicts mode of delivery of the babies. Vertex spontaneous vaginal delivery was found highest in 167 (70.17%) of cases followed by forceps delivery 24 (10.08%), Assisted breech delivery in 16 (6.72%), Transverse lie Internal podalic version and breech extraction 7 (2.94%) and LSCS in 24 (10.08%) of cases.

Table 5: SNCU/NICU Admission, Prenatal Outcome And Complications Developed In SNCU Of Both Babies

SNCU/NICU admission	First twin		Second twin		P value
	No.	%	No.	%	
SNCU	111	46.6	117	49.2	
Outcome					
Alive	220	92.44	219	92.02	0.163 (Not Significant)
Dead	6	2.52	8	3.36	
Stillborn	12	5.04	11	4.62	
Total	238	100.00	238	100.00	
Complications					
RDS	75	67.57	86	73.50	
Sepsis	22	19.82	32	27.35	
Convulsion	8	7.21	13	11.11	
Hypoglycemia	12	10.81	18	15.38	
Hyperbilirubinaemia	18	16.22	22	18.80	
Neonatal hyperventilation	9	8.11	11	9.40	

Table 5 depicts SNCU/NICU admission, prenatal outcome and complications developed in SNCU of both babies. One hundred eleven cases (46.6%) of first twins and 117 (49.2%) cases of second twins were admitted under SNCU. For perinatal outcome, 220 (92.44%) of first twins were alive whereas 219 (92.02%) of second twins were alive and the difference was not statistical significant with the P = 0.163. Perinatal morbidity and mortality are slightly high in the second twin. Incidence of RDS was seen most commonly in 75 (67.57%) in first tween and 86 (73.50%) in second tween followed by Sepsis 22 (19.82%) in first tween and 32 (27.35%) in second tween, convulsion 8 (7.21%) in first tween and 13 (11.11%) in second tween, hypoglycemia 12 (10.81%) in first tween and 18 (15.38%) in second tween, Hyperbilirubinaemia in 18 (16.22%) in first tween and 22 (18.80%) in second tween and Neonatal hyperventilation 9 (8.11%) in first tween and 11 (9.40%) in second tween.

Birth asphyxia (Apgar score at 5 min ≤6) was the most common complication observed among the second twins (21.65%).

DISCUSSION

A total of 238 consecutive pregnant women having twin gestation beyond 28 weeks of gestation attaining our institute during the study period were included in the study. Sociodemographic profile of multiple pregnancies is mentioned in Table 1. Multiple pregnancies were highest in the maternal age group of 21–30 years consisting of 154 (64.7%), which was supported by Konar et al. where they found the incidence of 65.71% in the age group of 20–29 years.[14]. Multiple pregnancies were more prevalent in primigravida consisting of 138 (58%%), whereas in the study of Kwon et al. they found the incidence of 67.1% in the primigravida women.[15]. Parity 1 to 2 were highest i.e. 222 (93.4%) mothers. Gestational age of 159 (66.8%) of mothers were < 37 weeks.

Our study reveals that most women (194 or 81.5 %) 20 years of age group, and only 44 (18.5%) women were in the age group of <20 years age group. However, maternal age was not found to be associated with perinatal outcome of the second twin. A unified picture on this relationship does not exist yet [16-19]. Perinatal mortality of the second twin was significantly higher (8.7%) among Primigravida women than multigravida women (7.0%; p>0.05) which does not corroborates with a study from Pakistan [20]. Increased parity is known to increase the risk of dizygotic twins [21]. In this study, perinatal outcome of the second twin was unfavorable among primigravida multigravida women compared to their multigravida counterparts. This observation is in no contrast to other studies [22,23]. Perinatal mortality of the second twin was only found in LBW (<2500 g) babies (8.6%). Other studies also support our findings [24,25].

In this study birth weight of majority of both the twins were lies between 2 – 2.5 kg i.e. 148 (62.18%) and 147 (61.76%) respectively. 70 (29.41%) of first twin and 73 (30.67%) of second twin were lies < 2 kg kg and 20 (8.40) of first twin and 18 (7.56%) of second twin were lies 2.5 – 3 kg birth weight group.

It is a known fact that birth weight <2500 gm has a poorer outcome in terms of morbidity and mortality of both the twins. In the present study, the perinatal mortality was highest in the birth weight of <2.5 kg, This was similar to Konar et al. who observed perinatal outcome of the second twin was unfavorable among low birth weight.[14]

This study shows that time interval between the babies were < 10 minutes in 74% of cases. Delivery interval was not found to be an influential factor in the perinatal outcome of the second twin. This was supported by the study of Cukeirman et al. who found that composite adverse outcome of the second twin and NICU admission was not significantly influenced by inter-twin delivery interval.[26] Similar observation was quoted by Algeri et al. that intertwin delivery time was not an influencing factor.[27]

In our study vertex vaginal delivery Vertex spontaneous vaginal delivery was found highest in 167 (70.17%) of cases followed by forceps delivery 24 (10.08%), Assisted breech delivery in 16 (6.72%), Transverse lie Internal podalic version and breech extraction 7 (2.94%) and LSCS in 24 (10.08%) of cases. Our observation is supported by the other studies [28,29]. It can be concluded that the mode of delivery is a significant predictor of perinatal outcome. However, whether it is the presentation or the mode of delivery that affects the perinatal outcome is not quite conclusive, as conflicting reports are available in the literature [30,31].

In this study 111 (46.6%) cases of first twins and 117 (49.2%) cases of second twins were admitted under SNCU. For perinatal outcome, 220 (92.44%) of first twins were alive whereas 219 (92.02%) of second twins were alive and the difference was not statistical significant with the P = 0.163. Perinatal morbidity and mortality are slightly high in the second twin. Armson, et al. concluded that the second twin has a greater risk of adverse perinatal outcome than the first twin, independent of presentation or infant sex.[10] Present work is also in line with their observations.

Incidence of RDS was seen most commonly in 75 (67.57%) in first tween and 86 (73.50%) in second tween followed by Sepsis 22 (19.82%) in first tween and 32 (27.35%) in second tween, convulsion 8 (7.21%) in first tween and 13 (11.11%) in second tween, hypoglycemia 12 (10.81%) in first tween and 18 (15.38%) in second tween, Hyperbilirubinaemia. Similar complications were observed by Konar et al. and he noted complications like, neonatal hyperbilirubinemia, neonatal septicemia, etc.[33]

Birth asphyxia (Apgar score at 5 min ≤6) was the most common complication observed among the second twins (21.65%).

Minakami H studied the effect of inter-twin delivery time on APGAR scores of the second twin.[34] According to their study, gestational age is the most important factor influencing the APGAR scores of second twins. The addition of delivery interval improves the productivity of second twin's APGAR score by gestational age. It was noted that gestational age is the most important factor influencing the APGAR scores of second twins.

CONCLUSION AND RECOMMENDATIONS :

The study findings emphasize the importance of appropriate management protocols directed towards counseling, frequent and regular antenatal check-ups, early admission of mothers, and proper care during intrapartum and immediate postpartum periods. Second twins should be managed more carefully during intranatal and early neonatal periods. Twin pregnancy can be effectively managed in a tertiary health care facility to optimize maternal and fetal care for improving perinatal outcome.

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